RESEARCH

Cariboo Forest Region

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EXTENSION NOTE #16
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Sheep Grazing for Vegetation Control

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Animals have been used to graze vegetation in forests throughout the world. Livestock are often used in agroforestry, in which agricultural crops are grown under a forest canopy, to help control unwanted vegetation while gaining extra forage.

The use of sheep has been less extensive in British Columbia and began in the Cariboo Forest Region in 1984. That summer, sheep grazed a cutblock dominated by fireweed near Hendrix Lake (ICHmk3) in the 100 Mile House Forest District to extend their area of summer range. The block had been planted with spruce, and observations of the grazing showed relatively little damage to the seedlings. Trials of this method of vegetation control have since been implemented in the Horsefly and Quesnel Districts in the Cariboo, and sheep grazing has become a considerable source of research work and media attention. In 1993, sheep grazed 450 hectares on two projects to control competing vegetation on cutblocks in the Cariboo Forest Region.

OBJECTIVES

The objectives of the Cariboo Region's sheep grazing program are:

- to improve the survival and growth of seedlings by controlling competing vegetation
- to test sheep grazing as a site preparation and brushing vegetation management tool

WHY SHEEP?

Sheep grazing has been shown to be an effective method for controlling vegetation. It can provide an alternative to chemical brush control, and in some cases can be used where herbicides cannot be applied. Grazing sheep on cutblocks is a good example of integrated resource management and has high public acceptance as a forest management practice.

TARGET VEGETATION

Research to date shows that sheep graze selectively. They readily graze fireweed and grasses, but prefer a combination of species.

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Monitoring of grazing at Moffat Creek (ESSFwk1) in 1993 showed a high preference for fireweed and horsetails with little thimbleberry removed. At Boss Creek (ESSFwk1), cow parsnip and false Solomon's seal were grazed along with fireweed, but again, little thimbleberry was removed (Figure 1). Raspberry is also not grazed readily by sheep. Willow and alder shrubs are grazed as high as the sheep can reach, and sheep will sometimes trample willow stems to graze on the branch ends. The following table summarizes sheep preference for some common species of target vegetation.

Preferred Species	Less Preferred Species
Fireweed	Thimbleberry
Grasses	Raspberry
Sitka Valerian	Huckleberry
Aspen	Paper birch
Willow	Alder
	Twinberry
	Bracken fern
	Indian hellebore

Some findings on sheep grazing preferences are:

- Sheep prefer new, succulent growth, whether it is the spring flush or regrowth after a first graze.
- Vegetation degraded by frost or drought has reduced palatability.
- Target vegetation should be less than 1m tall so that the sheep can graze the entire plant.
- Target vegetation must not be woody, as sheep will leave fireweed stems and graze only the leaves in the late summer.

Sheep also have a varying preference for conifers. Current data show that the least preferred species is spruce, followed by Douglas-fir. Pine is the most preferred. Although some pine plantations have been successfully grazed, others have not. Grazing sheep on a pine plantation requires intensive sheep management and is currently not recommended.

Seedlings are most susceptible to damage immediately after planting and when flushing. Sheep may browse the succulent new foliage and cause mechanical damage to new leaders while moving through the block.

SHEEP MANAGEMENT

Proper management of the sheep flock is critical to achieve even vegetation removal over the entire cutblock. Some recommended sheep management techniques are:

- Keep the sheep together as a cohesive unit.
- Avoid trampling damage to seedlings by moving the sheep only once over any given portion of the block and using roads and skid trails to move sheep to and from the grazing area.
- Hire experienced shepherds.
- Use well-trained dogs.
- Camp next to night corrals to ward off predators.
- Never leave the sheep unattended.

SITE CHARACTERISTICS

Some of the site characteristics required for sheep grazing are:

- Less than 50% slope,
- Sufficient water for the sheep without the potential for contamination of watercourses,
- Low slash that will not block or injure the sheep,
- Few gullies or features that hide sheep or predators,
- Accessibility to a main road for transporting the sheep,
- Proximity to alternative blocks for grazing in the event of unacceptable seedling damage, and
- Proximity to other cutblocks planned for grazing to reduce mid-season transportation.

OTHER RESOURCE CONCERNS

The effects of sheep grazing projects on wildlife and environmental factors must be considered at all stages of grazing projects. Standards under the Forest Practices Code will bring restrictions and new requirements for grazing sheep on cutblocks.

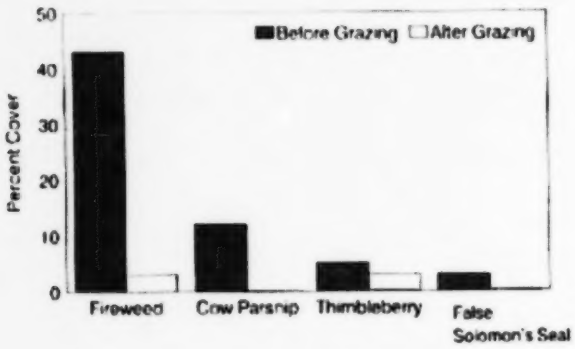

Figure 1. Changes in Vegetation Species Immediately after Grazing Boss Creek, 1993

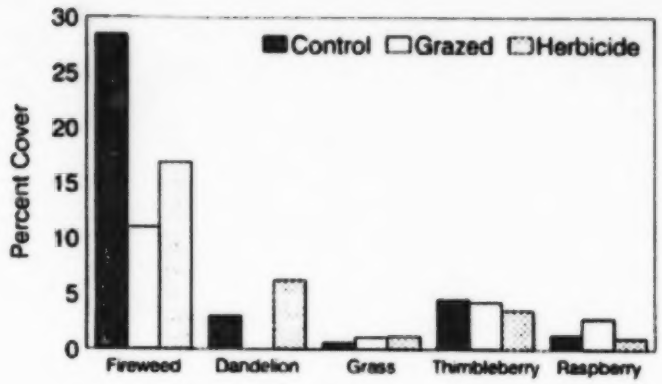

Figure 2. Differences in Vegetation Species Grazed vs. Herbicide vs. Control

Disease transmission from domestic sheep must not affect wild sheep populations. Predation on sheep by carnivores must be minimized to avoid any destruction of wildlife. Furthermore, water quality on sites grazed by sheep cannot be compromised, and soil compaction from sheep activity should be minimal.

VEGETATION REMOVAL

Grazing is most effective on new sprouts found either in the spring or on regrowth following grazing. Grazing should leave 5 to 15% of the target vegetation cover so that the sheep do not begin damaging seedlings when their forage supply becomes low. A minimum of two to three passes will be required to weaken the target vegetation and release conifer seedlings from competition. Grazing on regrowth in the same year is considered a second pass.

RESEARCH RESULTS

Seven-year results at the Doreen Creek trial show significant control of fireweed by grazing and by Vision herbicide compared to the untreated control (Figure 2). The trial also shows a slight, but insignificant, seedling growth increase on the areas grazed and those treated with Vision herbicide compared to the control. However, vegetation competion was only moderate on this site. Other sites have not shown seedling growth increases from grazing because of seedling damage, poor initial seedling vigour, or insufficient time since trial establishment to form conclusions.

PUBLICATIONS

Newsome, T., B. Wikeem and C. Sutherland. 1994. **Sheep Grazing Guidelines for Managing Vegetation on Forest Plantations in British Columbia.** Land Mgmt. Hdbk. #34.

CONTACT

For more information on the sheep grazing research monitoring program, please contact **Teresa Newsome,** Research Silviculturist, at 398-4408.

** This Extension Note was based on a presentation given by Teresa Newsome to the Integrated Forest Vegetation Management Conference in Richmond, November 1993.*

SUMMARY OF CURRENT KNOWLEDGE

Sheep will control some species of vegetation, such as fireweed and grass.
New sprouts are more palatable and nutritious to sheep.
Potential seedling damage varies by species. Spruce is the least susceptible to damage, followed by Douglas-fir and pine.
Grazing with two to three passes can achieve comparable vegetation control results to Vision herbicide, but at a considerably higher cost.
Proper management of sheep on the block is essential to successful vegetation management by grazing.